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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/803,719	03/18/2004	Uri Elzur	14147US02	6992

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EXAMINER	
NGUYEN, LONG P	
ART UNIT	**PAPER NUMBER**
2616	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/803,719	ELZUR, URI	
	Examiner	Art Unit	
	Long P. Nguyen	2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-37* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-37* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *18 March 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 101

1. 35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 28-32 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter on the basis of nonfunctional descriptive material.

Claim 28-32 recites, "**forming...a transport protocol segments**" in lines 1.

In claim 28, a segment is data structure, which are descriptive material per se and are not statutory, see e.g., Warmerdam, 33 F.3d at 1361, 31 USPQ2d at 1760 (claim to a data structure per se held nonstatutory). Such claimed data structures do not define any structural and functional interrelationships between the data structure and other claimed aspects of the invention, which permit the data structure's functionality to be realized. Thus, the claim is non-statutory.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –

(e) The invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1,3-4, 9-10, 12-16, 18-20, 23-26, 28-31, 33-34, and 36-37 are rejected under 35 U.S.C. 102(e) as being anticipated by Cheriton et al. (US 6,675,200, Hereinafter, Cheriton).

As for claim 1, Cheriton shows a sender **(Col. 3 line 5, e.g. network host)** that adapts a transport protocol segment **(Col. 3 line 43)**, wherein the transport protocol segment comprises a self-describing header **(Col. 3 line 43, e.g. RDMA data)** and an indicator **(Col. 3 line 47, e.g. RDMA identifier)**, and wherein the indicator indicates the presence the self- describing header **(Col. 3 line 43-45)**.

As for claim 3 and 19, Cheriton shows a transmission control protocol (TCP) **(Abstract)**, and wherein the transport protocol segment comprises a TCP segment **(Col. 3 line 43)**.

As for claim 4 and 20, Cheriton shows the indicator resides in an options field of a TCP header of the TCP segment **(Abstract)**.

As for claim 5, Cheriton shows the indicator is an option in the options field **(Abstract)**.

As for claim 9 and 23, Cheriton shows the control information used to place data information in the TCP segment **(Figure 2, e.g. data length)**.

As for claim 10, Cheriton shows the control information is used to delineate boundaries of a ULP payload of the TCP segment **(Figure 2, e.g. data payload)**.

As for claim 12, Cheriton shows wherein the control information comprises a buffer location **(Figure 2, e.g. Buffer offset)**.

As for claim 13, Cheriton shows wherein the buffer location comprises an upper layer protocol (ULP) buffer location **(Col. 4 line 44)**.

As for claim 14, Cheriton shows the transport protocol segment is part of at least one of a byte stream and chunks **(Col. 5 line 27-30)**.

As for claim 15, Cheriton shows each transport protocol segment of the byte stream is self-describing **(Col. 5 line 30-32)**.

As for claim 16, Cheriton shows a receiver **(Col. 3 line 6, e.g. client)** adapted to process a transport protocol segment **(Col. 3 line 43)**, wherein the transport protocol segment comprises a self-describing header **(Col. 3 line 43, e.g. RDMA data)** and an indicator **(Col. 3 line 47, e.g. RDMA identifier)**, and wherein the indicator indicates the presence the self- describing header **(Col. 3 line 43-45)**.

As for claim 18, Cheriton shows the receiver is adapted to process the transport protocol segment in a flow-through manner **(Col. 3 line 44-46)**.

As for claim 24, Cheriton show the self-describing header is disposed within at a payload **(Col. 3 line 44-45)**.

As for claim 25, Cheriton shows the self-describing header is disposed after the transport protocol header **(Col. 3 line 44-46)**.

As for claim 26, Cheriton shows the receiver uses information residing in the self-describing header to place data information in the transport protocol segment into a host memory of the receiver **(Col. 4 line 37-44)**.

As for claim 28, Cheriton shows inserting a self-describing header in a transport protocol segment **(Col. 3 line 43, e.g. RDMA data)**; and an indicator **(Col. 3 line 47, e.g. RDMA identifier)**, and wherein the indicator indicates the presence the self-describing header **(Col. 3 line 43-45)**.

As for claim 29, Cheriton shows the indicator resides in an options field **(Abstract)**.

As for claim 30, Cheriton shows the indicator is inserted in a transport protocol header **(Abstract)**.

As for claim 31, Cheriton shows the indicator is inserted after a transport protocol header **(Col. 3 line 56-57)**.

As for claim 33, Cheriton shows locating an indicator residing in a transport protocol segment **(Col. 3 line 40)**, the indicator indicating a presence **(Col. 3 line 40-45)**; locating the self-describing header **(Abstract)**; and directly placing data information stored in the transport protocol segment using information residing in the self-describing header **(Abstract)**.

As for claim 34, Cheriton shows determining control information based on information carried by the self-describing header **(Abstract)**.

As for claim 36, Cheriton shows making a placement decision based on the determined control information **(Abstract)**.

As for claim 37, Cheriton shows the self-describing header comprises a ULP buffer location **(Col. 4 line 38-44)**.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 2, 17 and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cheriton in view of Pinkerton (US 7,124,198).

As for claim 2, Cheriton shows the sender can identify a sender upper layer protocol (ULP) **(RDMA)** message boundary **(Col. 4 line 22-25)**, but does not show the sender can use the identified ULP message boundary to encapsulate information into self-describing transport protocol segments. However Pinkerton shows the sender can use the identified ULP message boundary to encapsulate information into self-describing transport protocol segments **(Figure 6b)**. It would have been obvious to one

of ordinary skill in the art at the time of the invention to modify the RDMA offset of Cheriton with the determine the number of ULP PDU framing of Pinkerton in order to reduce transmission over by encapsulate a maximum number of ULP PDU into one transport segment.

As for claim 17, Cheriton shows wherein the receiver is adapted to process the transport protocol segment **(Col. 5 line 29-30)** but does not show the TCP segment is in a non-flow-through manner. However Pinkerton show TCP segments is in a non-flow through manner (Col. 1 line 3-4) It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the transport segment of Cheriton with the reordering of Pinkerton in order accommodate for out of order packet due to network congestion.

As for claim 32, Cheriton shows an indicator in a TCP segment, but does not show the indicator is inserted in the self-describing header. However Pinkerton show the indicator is inserted in the self-describing header **(Col. 7 line 64-67)**. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the indicator placement of Cheriton with the indicator in the self-describing header of Pinkerton in order to in order to reduce the size of the TCP segment.

6. Claims 6, 7 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cheriton in view of Basso et al. (US 7,065,086).

As for claim 6 and 21, Cheriton shows the indicator resides in a field of a TCP header of the TCP segment, but does not show the indicator resides in a reserve field of

TCP header. However, Basso shows an indicator in the reserve field of the TCP header **(Col. 4 line 26-27)**. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify RID of Cheriton with the indicator in the reserve field of Basso in order to indicate the location of RDMA data (Cheriton Col. 3 line 44).

As for claim 7, Cheriton shows the indicator in the TCP header but does not show the indicator uses one reserved bit of the reserved field. However Basso show the indicator uses one reserved bit of the reserved field **(Col. 4 line 26-27)**. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the indicator of Cheriton with the indicator in the reserve field of Basso in order to utilize excess bits in the TCP header.

7. Claims 11 and 35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cheriton in view of Gonia et al. (US 5,500,864, Hereinafter, Gonia).

As for claim 11, Cheriton shows using the data length in order to put data into a TCP segment but does not show ensure correctness of at least one of the control information and a payload. However Attanasio shows ensure correctness of at least one of the control information and a payload **(Col. 1 line 40-45)**. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the data length of Cheriton with the checksum of Gonia in order to detect error in the TCP segment.

As for claim 35, Cheriton shows a length check but does not show determining an error code based on the determined control information; and error detecting or error

correcting using the determined error code. However Gonia show determining an error code based on the determined control information; and error detecting using the determined error code **(Col. 1 line 40-45)**. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the data length of Cheriton with the checksum of Gonia in order to detect error in the TCP segment.

a. Claim 8, 22 and 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Cheriton in view of Connor (US 7,010,613).

As for claim 8 and 22, Cheriton shows the indicator resides in a field residing in a TCP segment, but does not show the indicator is in the payload. However, Connor shows TCP payload carrying data **(Figure 3)**. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the indicator in a segment of Cheriton with the payload of Connor order to utilize unused space in the payload (Cheriton, Col. 6 line 1-2)

As for claim 27, Cheriton shows the receiver copies the data to a location in an ULP buffer by using information stored in the self-describing header **(Col. 4 line 38-44)** but does not show copying the information from an Ethernet. However Connor show TCP header and payload encapsulated in an Ethernet frame **(Figure 3)**. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the TCP segment of Cheriton with the encapsulation in Ethernet frame of Connor in order to comply with the OSI standard.

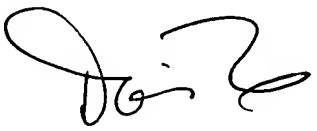
Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Long P. Nguyen whose telephone number is (571)-272-9740. The examiner can normally be reached on Monday - Thursday 7:30 - 5:00 EST Alternate Friday 7:30-4:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Doris To can be reached on 571-272-7629. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Long Nguyen



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